

COVER CASE OF RECORDING MEDIUM FOR RENTAL OR SALE USE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a cover case that accommodates a disk-like recording medium such as a CD, a DVD, game software, or the like.

2. Related Art

A disk-like recording medium such as a CD has a thin disk-like outer shape and a small round hole at its center that penetrates through the disk. The disk-like recording medium is accommodated in a thin cover case. The cover case includes a box-shaped main body having the widest surface on a base side and a cover having the widest surface on a cover side. The cover is connected to the main body through a connection portion and can cover the main body. Needless to say, a cover case not having the connection portion is available, too. Further, a cover case of the type in which the main body can be pulled out in a pullout system is known.

The disk-like recording medium is fitted as a holding portion so formed at the center of the base of the main body as to protrude from the base is fitted into a hole formed at the center of the disk-like recording medium. Various forms of the holding portion are known. However, the holding portion must satisfy the requirements that the disk-like recording medium fitted into the hole does not shake but remains stable, does not naturally fall off from the hole and can be easily removed at the time of removal.

"Apparatus for Holding a Compact Disk" disclosed in US 20030052024A1 employs the following construction. The device includes a base, radial direction arms flexibly cantilevered from the base and extending inward and disk engagement means formed at an inner end portion of each arm, for engaging with a center hole of a disk in such a fashion as to be capable of releasing the center hole and for supporting the center portion of the disk in a spaced-apart relation from the base. Each of the arms includes first rotation means positioned inside a region in which it is connected to the base and second rotation means positioned inward relative to the first rotation means in the radial direction. When the disk engagement means is pushed down towards the base, the inner end of each of the arms and the center

portion of the disk are pushed down towards the base. Each arm first rotates with the first rotation means as the center and then keeps its rotation with the second rotation means as the center until the holding force of the disk by the disk engagement means is released.

5 The disk is fitted while its center hole engages with the engagement means. To remove the disk, the engagement means engaging with the hole must be pushed from above to release it from the hole. When the engagement means is pushed, however, a load acts simultaneously on the disk and the disk undergoes deflective deformation. As a result, the disk is sometimes broken when it is taken out. In
10 case the engagement means is loosely fitted to the center hole of the disk to make it easier to remove the disk, however, the disk falls off by itself under the accommodation state.

Such problems similarly occur not only in "Apparatus for Holding a Compact Disk" of US 20030052024A1 described above but also in "Apparatus for Holding a
15 Compact Disk" disclosed in US 20020130056A1 and US 005788068A, respectively.

SUMMARY OF THE INVENTION

The cover case of the disk-like recording medium according to the prior art is not free from the problems described above. The present invention is directed to
20 solve these problems and to provide a cover case of a recording medium for rental or sale use that keeps a disk-like recording medium accommodated under a stable state without shaking and makes it possible to easily remove the disk-like recording medium without applying excessive force.

The cover case of a recording medium for rental or sale use according to the
25 present invention includes a main body and a cover. The cover can cover the main body accommodating the disk-like recording medium and its concrete form is not limited, in particular. A receiving table is so disposed at the center of a base of the main body as to protrude from the base and a center portion of the disk-like recording medium such as a compact disk (CD) is put onto the receiving table. An outer
30 peripheral edge having notches at places thereof extends from the base with the receiving table as the center and the outer periphery of the disk-like recording medium is put on and supported by the outer peripheral edge.

Two slit grooves are formed at the center of a support surface of the receiving table with a predetermined gap between them. An engagement protuberance is

formed at a distal end of each of arms so formed as to be interposed between both slit grooves and engages with the center hole of the disk-like recording medium. Engagement pawls are formed, whenever necessary, on the engagement protuberances in such a fashion as to erect from the engagement protuberances and to form a pair. Each engagement pawl extends from the arm. The engagement pawl is formed by cutting off a part of the engagement protuberance, can independently undergo deflection and fits into the center hole of the disk-like recording medium with the engagement protuberance. Here, the number of slit grooves is not limited to 2 and three or more arms can be disposed by forming three or more slit grooves.

The disk-like recording medium is put on the receiving table and the engagement protuberance fits into and engages with the center hole of the disk-like recording medium. When the engagement pawl is disposed, both engagement pawls engage with the center hole together with the engagement protuberances and fix the disk-like recording medium while preventing the recording medium from falling off from the receiving table. When the engagement pawl is not provided, any fall-off prevention means is sometimes disposed, whenever necessary. When the disk-like recording medium fixed is removed, the engagement protuberances are merely pushed from above and the arms undergo downward deflection and come off from the hole.

Because the disk-like recording medium is put on and supported by the support surface of the receiving table in this instance, the recording medium does not undergo deflective deformation. It is also possible to nip and pull the outer periphery of the disk-like recording medium. Because the engagement protuberances are formed at the distal ends of the arms, they can undergo deformation independently of the receiving table. Therefore, the disk-like recording medium can be removed from the hole without applying excessive force. The disk-like recording medium can be removed easily particularly when the engagement pawls are provided. Preferred embodiments of the invention will be hereinafter explained in detail with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

Fig. 1 is a perspective view showing a cover case of a disk-like recording medium according to an embodiment of the invention;

Fig. 2(a) is a top plan view of a receiving table provided to a main body and Fig. 2(b) is a sectional view of the receiving table when a disk is fitted;

Figs. 3(a) and 3(b) are sectional views of the receiving table when a disk is fitted and removed;

Fig. 4 is a schematic view of disk fall-off prevention means provided to the main body;

Fig. 5 is a perspective view showing a cover case of a disk-like recording medium according to another embodiment of the invention;

Fig. 6 is a top plan view of a receiving table of the cover case shown in Fig. 5;

Fig. 7 is a sectional view of a state in which an engagement protuberance is fitted into a disk center hole and is mounted to the receiving table;

Figs. 8(a) and 8(b) are schematic views, wherein 8(a) shows the state in which the disk is fitted to a receiving table and 8(b) does the state in which the disk is removed from the receiving table;

Fig. 9 is a perspective view of another form of the cover case; and

Figs. 10(a) and 10(b) are a perspective view of still another form of the cover case, wherein Fig. 10(b) shows the main body is drawn out.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Fig. 1 shows a cover case of a recording medium according to an embodiment of the invention. Reference numeral 1 denotes a main body and reference numeral 2 does a cover. The main body 1 has a box-shaped shape having the widest surface on a base side and the cover 2 has the widest surface on a cover side. The cover 2 is connected to the main body 1 through a connection portion 3 and can cover the main body 1. A receiving table 5 protrudes from a base surface 4 at the center of the main body 1. An outer peripheral edge 6 extends with the receiving table 5 as its center and notches 7, 7 and so on are formed at four positions of the outer peripheral edge 6.

Arms 8a and 8b are formed on a support surface 13 of the receiving table 5 and are separated from the receiving table 5 through slit grooves 9 and 9, respectively. Engagement protuberances 10a and 10b that have a shape of a substantially semi-circular cylinder protrude from the distal ends of the arms, respectively. A gap is defined between the engagement protuberances 10a and 10b so that these protuberances 10a and 10b can undergo extension and contraction. When

combined with each other, the engagement protuberances 10a and 10b form a low cylinder and fit into the center hole of the disk. A fall-off prevention pawl 11 protrudes from the base surface 4 on the side of the connection portion. The distal end of the pawl 11 is situated at a position at which a part of the outer peripheral edge 6 is cut off.

5 The pawl 11 can engage with the outer periphery of the disk placed on the outer peripheral edge 6. When the cover 2 is closed, the back of the fall-off prevention pawl 11 is pushed and the disk is prevented from falling off.

Fig. 2(a) shows the receiving table 5. Because the arms 8a and 8b are cut off from the receiving table 5 by the slit grooves 9 and 9, the engagement protuberances 10a and 10b can undergo deflective deformation when they are pushed. Fig. 2(b) shows the section of the disk 12 when it is fitted to the receiving table 5. The disk 12 is put onto the support surface 13 of the receiving table 5 and the engagement protuberances 10a and 10b fit into and engage with the center hole of the disk 12.

15 The disk 12 is put onto the receiving table 5 in such a fashion that the engagement protuberances 10a and 10b fit into the center hole. Fig. 3(a) shows the state in which the disk 12 is put and fitted to the receiving table 5. When the disk 12 is put to the receiving table 5, the edges of the engagement protuberances 10a and 10b strike the inner peripheral surface of the center hole of the disk and are pushed down by the latter and the arms 8a and 8b undergo deflective deformation as shown in the drawing. As a result, the engagement protuberances 10a and 10b undergo shrinkage and can fit into the center hole. Because the slight gap exists between both engagement protuberances 10a and 10b, they can undergo shrinkage as described above.

25 The state in which the engagement protuberances 10a and 10b fit into the center hole is shown in Fig. 2(b). When the arms 8a and 8b return to the original positions and the engagement protuberances 10a and 10b that have once undergone shrinkage again expand, they fit into the center hole. Because the arms 8a and 8b undergo deflective deformation in this way, the disk 12 can be fitted to the receiving table 5 without the application of excessive force. The outer periphery of the disk is put on and supported by the outer peripheral edge 6 and the outer peripheral edge 6 has a support surface for supporting the outer periphery of the disk.

30 To remove the disk 12 from the receiving table 5, on the contrary, the engagement protuberances 10a and 10b are pushed from above as shown in Fig. 3B.

When the engagement protuberances 10a and 10b are pushed, the arms 8a and 8b undergo deflective deformation whereas the engagement protuberances 10a and 10b undergo shrinkage. In this instance, the disk 12 is put on the support surface 13 of the receiving table 5 and its center portion does not undergo deflection even when
5 the engagement protuberances 10a and 10b are pushed.

Once the engagement protuberances 10a and 10b undergo shrinkage and come off from the center hole of the disk 12, they do not again fit into the center hole and the disk 12 can be easily removed. When the center portion of the disk 12 is put and fitted to the receiving table 5, the outer periphery of the disk 12 is put on and
10 supported by the outer peripheral edge 6 that protrudes on the base surface 4 of the main body 1. Because the notches 7, 7 and so on are formed at several positions of the outer peripheral edge 6, it is possible to put fingers to the notches 7 and to lift up and remove the disk 12.

Fig. 4 shows the state in which the disk 12 is put and fitted to the receiving
15 table 5 with its outer periphery being put to and supported by the outer peripheral edge 6 and the fall-off prevention pawl 11 for preventing fall-off the disk is engaged with the outer periphery of the disk 12. The outer periphery of the disk is put to and supported by the outer peripheral edge 6 and at the same time, is engaged with the fall-off prevention pawl 11 erecting from the base surface 4 as shown in the drawing.
20 When the cover 2 is closed, a support plate 14 formed in such a fashion as to protrude from the connection portion 3 strikes the back of the fall-off prevention pawl 11 and can support this pawl 11. In consequence, the disk 12 does not by it self come off from the engagement protuberances 10a and 10b. Here, it is not always necessary to provide the support plate 14 to the connection portion 3 but may be
25 formed on the cover itself depending on the form of the cover case.

Fig. 5 shows a cover case of the disk-like recording medium according to another embodiment of the invention. The basic form is the same as that of the cover case shown in Fig. 1. The main body 1 has a box-shaped shape having the widest surface on the base side and the cover 2 has the widest surface on the cover
30 side. The cover 2 is connected to the main body 1 through the connection portion 3 and can cover the main body 1. The receiving table 5 protrudes from the center of the base surface of the main body 1. The outer peripheral edge 6 extends from the receiving table 5 as the center and the notches 7, 7 and so on are formed at four positions of the outer peripheral edge 6.

Fig. 6 is an enlarged view of the receiving table 5 of the cover case shown in Fig. 5 and is a plan view. The arms 15a and 15b are cut off from the support surface 13 of the receiving table 5 by the slit grooves 16 and 16 and the engagement protuberances 17a and 17b protrude from the distal ends of the arms, respectively.

5 The engagement protuberances 17a and 17b are connected to each other through a soft resin and respectively have engagement pawls 18a and 18b that erect and form a pair. The engagement pawls 18a and 18b extend as a part of the engagement protuberances 17a and 17b from the arms but can undergo deflection independently of the arms 15a and 15b.

10 The engagement pawls 18a and 18b erect from the notches formed in the engagement protuberances 17a and 17b on the receiving table 5 but can undergo deflection independently of the arms 15a and 15b and can engage with the center hole of the disk 12. When the disk 12 is put to the receiving table 5 and is pushed, the engagement pawls 18a and 18b erecting while forming the pairs with the

15 engagement protuberances 17a and 17b undergo deflection and fit into the center hole to thereby prevent the disk 12 from falling off.

Because the engagement pawls 18a and 18b can undergo deflection independently of the arms 15a and 15b, they can easily fit into the center hole of the disk and can be engaged. In other words, Fig. 8(a) shows the state in which the disk

20 12 is put and fitted to the receiving table 5. When the disk 12 is put on the receiving table 5, the distal ends of the engagement pawls 18a and 18b strike the inner peripheral surface of the center hole of the disk and are pushed down, so that the arms 15a and 15b undergo deflective deformation as shown in the drawing. In consequence, the engagement protuberances 17a and 17b and the engagement

25 pawls 18a and 18b undergo shrinkage and can fit into the center hole. Because the slight gap exists between both of the engagement protuberances 17a and 17b, such shrinkage can occur.

When the disk 12 is removed, on the contrary, the engagement protuberances 17a and 17b fitting into the center hole are pushed as shown in Fig.

30 8(b). The arms 15a and 15b then undergo deflective deformation and at the same time, the engagement pawls 18a and 18b move towards the center together with the engagement protuberances 17a and 17b and come off from the center hole. Once coming off from the center hole, the engagement protuberances 17a and 17b do not again engage with the center hole even when a user leaves his fingers and the

engagement protuberances return to the original position.

The disk accommodation case of this embodiment includes the main body and the cover and the cover is connected to the main body through the connection portion. However, the form of the cover case according to the invention is not
5 limited.

Fig. 9 shows still another embodiment of the cover case. This cover case does not have the connection portion but enables the cover to be opened and closed. For example, the main body and the cover can be connected by forming a hinge having a small thickness or through a shaft pin. In Figs. 10(a) and 10 (b), the main
10 body 1 can be accommodated in a cover case 19. Needless to say, the receiving table and the outer peripheral edge are formed in the same way in such a fashion as to protrude from the base surface.

As described above, the cover case according to the invention employs the construction in which the receiving table is formed at the center of the base surface of
15 the main body, the center portion of the disk is put on the receiving table, the engagement protuberances fitting into the center hole are so formed as to protrude from the receiving table and the outer peripheral edge for supporting the outer periphery of the disk is so formed as to extend from the receiving table as the center. Therefore, the cover case of the invention can provide the following advantages.

In the cover case according to the invention, the center portion of the disk-like
20 recording medium is put on the receiving table formed on the main body and the outer periphery of the disk is put on and supported by the outer peripheral edge. The arms forming the pair are provided to the receiving table and the engagement protuberances erect from the distal ends of the arms. Because the arms are
25 separated from the support surface of the receiving table through the slit grooves, the arms can freely undergo deflective deformation.

When the engagement protuberances strike the center hole and are pushed down to fit the disk, the arms undergo deflection and both of the engagement protuberances undergo shrinkage and can fit into the center hole. To remove the
30 disk-like recording medium, on the contrary, the engagement protuberances fitting into the hole are pushed. Consequently, the arms undergo deflection and the engagement protuberances undergo shrinkage and can come off from the center hole. In this instance, the disk is not curved because it is put on and supported by the support surface of the receiving table and can be prevented from being broken.

Because the engagement pawls are provided to the engagement protuberances, fitting and removal of the disk can be made further smoothly and the disk fitted gets stabilized.